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8 Means of Payment in Takeovers: Results for the United Kingdom and the United States

Julian R. Franks, Robert S. Harris, and Colin Mayer

8.1 Introduction

Many aspects of corporate acquisitions have received extensive investigation, but there has been little analysis of their means of financing. This omission is notable in view of the substantial expenditures involved in takeovers. An earlier paper (Franks and Harris 1986b) records that in 1985 acquisitions represented 6 percent of the capital stock extant in the United Kingdom. By any account these are substantial investments whose method of financing warrants careful scrutiny. This paper provides a detailed empirical assessment of acquisition financing.

Although a descriptive analysis of acquisition finance is interesting in itself, there are more fundamental reasons for pursuing the subject. Over the past few years several theories of acquisition finance have appeared. As in other areas of research on corporate finance, these

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theories have emphasized the influence of taxation and information asymmetries. To date, however, little empirical work has examined their validity. An examination of these theories may be of value not only in understanding the acquisition process but also in assessing the relevance of information and tax considerations to more general issues of corporate capital structure.

We have chosen to make international comparisons between the United States and the United Kingdom in the analysis that follows because there are well-documented differences between the two countries in the response of share prices to the announcement of new issues of equity. One interesting question is whether similar differences are observed in equity-financed acquisitions. The two countries also exhibit significant institutional differences in regulations affecting corporate financing activities and taxation, regulations that should affect the preferred means of payment for acquisitions. For example, the U.S. government has demonstrated a much more liberal attitude toward share repurchases than has the U.K. government over most of the period under study here. As a consequence, at least one set of theories would anticipate different financing patterns between the two countries.

Following a preview of this paper's results in the next section, section 8.3 surveys theories of acquisition financing, and section 8.4 summarizes existing empirical studies. The data set and methodology are described in section 8.5. Spanning the period 1955–85, the data include over 2,500 acquisitions in the United Kingdom and the United States, forming probably one of the largest corporate data sets employed in an analysis of acquisitions.

Section 8.6 examines the forms of financing that were used in acquisitions over the 30 years of the study. These financing patterns are related to salient tax and institutional considerations. Section 8.7 describes share price responses around the announcement date of the acquisition and also reports the wealth gains to bidders and targets in cash- and equity-financed acquisitions. Previous studies have recorded performance variations by class of acquisition. For example, bid premia have been observed to be greater in tender offers than in mergers. Here we assess whether these differences can be attributed to the forms of financing or to the type of acquisition. Section 8.8 reports postmerger performance for up to two years after the acquisition. Finally, section 8.9 summarizes the results and discusses how the limitations of the methodology employed here can be avoided in a broader cross-sectional study.

8.2 A Preview of the Results

In view of the length of this paper, we provide a preview of the results to help focus our description of the theory and the hypotheses.

8.2.1 Means of Payment

1. Just over half of the sample of U.K. acquisitions were either "all equity" or "all cash" bids, with an approximately equal distribution between the two. Almost two-thirds of the U.S. acquisitions were either all equity or all cash.

2. The higher proportion of "mixed bids" in the United Kingdom is in part accounted for by the provision of cash alternatives to equity offers. Those cash alternatives are frequently underwritten.

3. In the latter half of the 1960s approximately half of the U.S. acquisitions were effected by an offer of convertibles, although their use dropped significantly by the 1970s.

4. Cash acquisitions in the United States increased from a negligible proportion of all acquisitions during the 1950s to just under 60 percent by number during the 1980s.

5. There has not been a similar discernible upward trend in the use of cash in the United Kingdom.

8.2.2 Returns around the Announcement of a Merger

1. Returns to bidder shareholders were similar in cash- and equity-financed acquisitions in the United Kingdom during the six months before (but not including) the announcement month. U.S. acquirers offering equity slightly outperformed those offering cash in the prebid period.

2. Bid premia to target shareholders in cash acquisitions were significantly in excess of those accruing to shareholders in equity acquisitions in both countries.

3. In the United Kingdom neither cash nor equity acquisitions displayed significant abnormal returns to bidder shareholders in the month of an acquisition. Gains to acquisitions thus accrue to target shareholders.

4. In the United States there are significant positive gains to bidder shareholders in cash acquisitions and significant losses in equity acquisitions.

8.2.3 Postmerger Returns

1. Postmerger returns (measured two years after the merger was finalized) were not significantly different from zero in cash acquisitions in either country.

2. There is evidence that U.S. shareholders sustained abnormal losses in the two years after an equity acquisition.

8.2.4 Results Relating to Capital Gains Tax Theories

1. The larger gains accruing to target shareholders in cash acquisitions than in equity acquisitions may be consistent with the theory that

target shareholders have to be compensated for the capital gains taxes levied on cash but not on equity acquisitions.

2. Nevertheless, differences in bid premia in cash- and equity-financed acquisitions in the United Kingdom existed before 1965, when a capital gains tax was introduced. Bid premia can therefore at best only be partly explained by capital gains tax.

3. Furthermore, this proposition is not supported by other evidence showing the means of payment to be unresponsive to appreciable changes in capital gains tax rates in the United Kingdom.

8.2.5 Results Relating to "Trapped Equity" Theories

1. Theories that treat acquisitions as a tax-efficient method of making distributions to shareholders predict a reduction in cash acquisitions when the costs of alternative forms of distributions (such as dividends) fall (King 1986). The proportion of acquisitions financed with cash was not affected by the 1973 introduction of the imputation tax system in the United Kingdom, which reduced the costs of dividend payments.

2. Despite the fact that repurchases of shares were not feasible in the United Kingdom over the period of the study, the proportion of acquisitions financed with cash in that country was less than in the United States in recent years. Since repurchases are as tax efficient as cash acquisitions, trapped equity theories would predict a greater use of cash in the United Kingdom. The availability of a stepped-up basis on depreciable assets may have provided a tax incentive for the higher use of cash in the United States.

8.2.6 Results Relating to Information and Agency Theories

1. The proposition that cash is used in high-value acquisitions to preempt competing bids (Fishman 1986) is consistent with the finding of larger bid premia paid in cash than in equity acquisitions.

2. Nonetheless, the evidence that cash was more commonly employed in contested bids is not consistent with the view that cash is preemptive.

3. The abnormal losses incurred by shareholders of bidding companies (in the United States, at least) upon announcements of equity acquisitions, and the postmerger abnormal losses associated with equity acquisitions, are consistent with the proposition that asymmetries in information encourage the issue of overvalued equity by acquirers.

8.2.7 Explaining Previous Results

1. A significant proportion of the difference in bid premia between tender and non-tender offers is attributable to the greater use of cash in tender offers.

2. Negative postmerger performance by the firm, which has been observed in some previous studies, appears to be closely associated with the use of equity.

8.2.8 International Comparisons

1. In the U.S., acquirers using equity incur abnormal losses on the bid announcement, whereas those using cash make abnormal gains. In the U.K., in contrast, no significant gains or losses are incurred by bidders using cash or equity. These results are similar to those found in event studies of new (seasoned) equity issues in the United Kingdom and United States, respectively.

2. Underwriters in the United Kingdom played a much more important role in acquisition finance than did their counterparts in the United States. Not only did they play a role in financing acquisitions where the bidder lacked cash, but also where the bidder required external validation of the valuation of its offer.

8.3 Theories of Means of Payment in Acquisitions

In complete markets with symmetric information and in the absence of taxes, shareholders should be indifferent to the means of payment used in acquisitions: share price responses should reflect only the changes in fundamental values induced by the merger. But the tax system and specific features of the capital market do encourage the use of particular forms of finance. This section surveys theories of the choice of acquisition financing. We first discuss the tax-based models and then agency and information theories.

8.3.1 The Influence of Taxation on the Medium of Exchange

The choice of a means of exchange affects the tax liabilities of the acquired firm's shareholders. In an equity acquisition the investor's acceptance of the stock of the acquiring company avoids the realization of any capital gain and does not therefore impose an immediate capital gains tax liability on the investor. These taxes are deferred until the investor sells the shares. In a cash purchase the investor's gain must be realized immediately for tax purposes, thus creating a tax liability at the capital gains tax rate. In the absence of other considerations, we would not expect to observe cash acquisitions. Nonetheless, the payment of capital gains taxes depends on the tax status of the investor, and the full capital gains tax rate may be mitigated by exemptions and allowances. The rate will be smallest for targets with "marginal" investors that are tax exempt or have unused allowances. For these investors personal tax considerations will bear little relation to the desired means of payment.

Where a capital gains tax liability is created, additional considerations must justify the use of cash. For example, under the U.S. tax code a cash acquisition permits the acquiring company to "write up" certain assets of the acquired firm to their fair market value. This write-up produces higher tax deductible depreciation allowances not available in all equity bids. This corporate tax advantage of cash bids is somewhat tempered by the recapture taxes due on the written-up values of tangible assets when the acquisition is consolidated by the acquirer. Thus, the U.S. code can provide an incentive for cash bids in cases in which market values exceed book values of the acquired firms' assets. Such a "stepped up" basis is not available in the United Kingdom. For target shareholders to be indifferent to the use of cash and nontaxable forms of payment, cash purchases must create pretax gains, as measured by bid premia, that are larger than those associated with equity purchases. The net gain to the bidder is then the value of the "write up," less the increment to the bid premium. Thus:

HYPOTHESIS 1. *Bid premia are higher in cash-financed than in equity-financed acquisitions. Other things equal, the use of cash in acquisitions is inversely related to the capital gains tax rate of the acquired firms' shareholders and directly related to the potential for writing up depreciable assets.*

The above-mentioned disincentives to use cash in acquisitions may be offset by considerations of the tax position of the acquiring firm's shareholders. Cash acquisitions may afford tax savings because dividend payments are taxed at shareholders' personal income tax rates. Thus, cash acquisitions may be more tax efficient than dividend payments if capital gains taxes are smaller than personal income taxes on dividend income. According to the models of Auerbach (1979) and King (1977), under conditions in which a firm's marginal valuation ratio (referred to below as q) is less than unity but more than the value of a unit dividend distribution to shareholders, there are disincentives to paying cash dividends. Distributions to shareholders could be achieved at a lower tax cost by share repurchases or voluntary liquidation (see Edwards and Keen 1985). In the United Kingdom share repurchases have been permitted only since 1985. In the United States share repurchases were permitted for the period of our study and have now become widespread (see Shoven and Simon 1987). It is possible, however, that even in the United States restrictions on the tax status of repurchases may favor alternative routes of distributing cash—through, for example, acquisitions. Thus:

HYPOTHESIS 2. *The incentives to use cash in acquisitions are greater in circumstances where share repurchases are prohibited or costly.*

King (1986) has further specified the tax incentive to make cash acquisitions. He argued that, in the absence of share repurchases, cash acquisitions are a tax-efficient way of distributing trapped equity to stockholders. Companies make cash acquisitions because the cost of purchasing assets traded in the corporate sector is less than that of purchasing (equivalent) assets in the unincorporated sector. The difference in cost is accounted for by the tax wedge between income taxed in the corporate and personal sectors.

More formally, let C_a and C_i be the costs of adjustment associated with a unit purchase of capital through acquisition and capital investment, respectively. Equality at the margin of the cost of purchases through cash acquisition and investment requires that:

$$q + C_a = 1 + C_i, \tag{1}$$

if we assume that financial markets place a value of q on an additional unit of capital (which costs \$1 to purchase in the absence of adjustment costs) once it is in the corporate sector. King's model focuses on the implications of having \$1 in the corporate sector (generated from, say, previously profitable investments) that is worth q^* in financial markets; q^* may be less than unity because of the double layers of corporate and personal taxes. As these dollars are used to purchase capital (at a cost of $1 + C_i$), equality at the margin requires that

$$q = q^*(1 + C_i). \tag{2}$$

Substituting (2) into (1) and simplifying yields

$$C_a = q((1/q^*) - 1). \tag{3}$$

If profits in the corporate sector are taxed more heavily than those in the personal sector, q^* is less than unity, and the expression on the righthand side of equation (3) is increasing in q. Thus, under reasonable descriptions of the cost of adjustment function, C_a, acquisitions are increasing in q. For example, letting A represent dollars spent on acquisitions and K the capital stock, the quadratic costs of adjustment are described as $C_a = \beta_0 + \beta_1 (A/qK)$. Substituting this into equation (3) yields

$$A/K = -(\beta_0 q/\beta_1) + (1/\beta_1)q^2[(1 - q^*)/q^*] \tag{4}$$

The driving force behind King's description of acquisitions is the undervaluation at the margin of \$1 in the corporate sector—the so-called trapped equity model of acquisitions. For example, if the corporate tax rate is t and the personal tax rate is m, then under a classical system of taxation, $q^* = (1 - t)$, and under an imputation system with an imputation rate of m, $q^* = (1 - t)/(1 - m)$, which creates an incentive to acquire so long as $t > m$.[1] Thus:

HYPOTHESIS 3. *The tax incentive to make cash acquisitions is increasing in the value of the tax wedge* $(1 - q^*)$ *and the square of the marginal valuation of capital ratio,* q.

8.3.2 Information and Agency Models

If all parties to an acquisition are not equally well informed about future prospects, the choice of a means of finance may be influenced by considerations other than taxation. In particular, asymmetries in information encourage the pursuit of opportunistic gains. In acquisitions two types of asymmetries in information might be anticipated: either the acquirer has superior information about valuations of its assets, or the acquiree has superior information about its assets. In the former case the acquirer has an incentive to undertake equity acquisitions during periods in which its shares are overvalued—or at least not undervalued. In the latter case the acquiree has an incentive to accept offers during periods in which its equity is perceived to be overvalued.

Myers and Majluf (1984) have examined the influence of misvaluations on the incentives for firms to make new equity issues. They argued that there is a disincentive for firms to use new equity as a means of funding new investments. If managers have superior information about the value of the firm's existing assets and investment opportunities, they will want to restrict sales of shares to periods when current and prospective investments are not undervalued by new investors. New shareholders in turn appreciate this incentive to sell overvalued equity, and as a result they downgrade their valuation of firms that make new equity announcements. Furthermore, since firms have an alternative form of financing available (say, cash or debt) that avoids the adverse selection problem, any new issues of equity must be prompted by overvaluation.[2] Riskless securities will be issued in preference to equity, thereby creating the "pecking order" hypothesis of Myers (1984), according to which retentions are used in preference to debt, which is in turn issued in preference to equity. Smith (1986) reviewed studies demonstrating negative average price effects when a new stock issue is announced.

In the context of acquisitions the Myers and Majluf model has two principal implications. The first is that the use of equity will be discouraged in circumstances in which bidders are better informed about their own asset valuation. The second is that bidders will be discouraged from buying shares in targeted companies if the targets are better informed about their own valuations than are bidders. In sum, asym-

metries in information about the value of targets discourage acquisitions, and asymmetries in information about the value of the bidder discourage the use of equity finance. These information asymmetries give rise to the following share price response:

HYPOTHESIS 4. *The announcement of equity as the medium of exchange in an acquisition leads to a fall in the share price of the bidder (the issuer), while the use of cash leads to a rise in share price.*

Changing one's assumptions about the information structure leads to rather different predictions. If information about the quality of the acquirer or acquiree becomes evident only after the bid announcement, revaluations will subsequently occur and managers will have incentives to use particular types of finance. The literature discusses three possibilities.

First, if the acquirer is better informed about the value of its own equity and misvaluations are revealed only after the acquisition, the acquirer has an incentive to use equity during periods of overvaluation. When equity is undervalued, acquirers will offer cash (Myers and Majluf 1984).

Second, if the acquiree is better informed about its own value, and its true valuation is revealed only after the acquisition, equity offers will be preferred to cash when equity is believed to be undervalued (Hansen (1984, 1987)). Acquirees prefer to retain an equity participation in the merged firm in order to capture some of the subsequent gains when the undervaluation is revealed.

Third, if premerger appraisals make the acquirer well informed about the high value of the acquiree, it will offer cash in the acquisition. This follows from the desire of the acquirer to capture the benefits of high value acquisitions and to avoid sharing these gains with the acquiree. Conversely, when it is uncertain about acquiree valuations, the acquirer will wish the acquiree to retain an equity holding. This diminishes the adverse selection problems associated with better informed acquirees (Fishman 1986).

Fishman has also argued that cash will be associated with high offers and high bid premia provided by the acquirer. He assumed some fixed costs for collecting information about the value of the prospective target, which encourage acquirors who establish high-value acquisitions to make preemptive bids.[3] These preemptive bids deter other companies from paying for information and initiating competing offers. Cash offers should therefore be associated with high bid premia for the target, low levels of competition, and positive abnormal performance for the bidder after the bid announcement.

In sum, theories of acquisition finance offer some explicit hypotheses about the means of payment, bid premia, and share price movements after a bid announcement. In the remainder of the paper we examine how well each of the theories explains the empirical results.

8.4 Previous Empirical Work

8.4.1 Means of Payment

Two previous studies have investigated the choice of financing method used in U.S. acquisitions, incorporating, at least to some extent, personal tax considerations. Applying a conditional logit model, Carleton et al. (1983) examined the financial accounts of acquired firms to study the probability of three events: being acquired in a cash offer, being acquired in a securities exchange, and not being acquired. In their sample of companies from the years 1976–77, they found (p. 825) that "lower dividend payout ratios and lower market-to-book ratios increase the probability of being acquired in a cash takeover relative to being acquired in an exchange of securities." The authors concluded that on the assumption that book values measure the basis on which capital gains liabilities are calculated, the finding on market-to-book ratios is consistent with a personal tax disadvantage to cash offers. They also discussed the possibility that a market-to-book ratio may proxy for other effects such as inefficient management of the target. The authors found no satisfactory explanation for their findings on dividend payout.

Niden (1986) has provided an extensive discussion of tax issues in U.S. takeovers. She examined the choice between taxable (essentially all-cash) and nontaxable (mainly equity) forms of payment based on an analysis of variables proxying for the tax position of each of the combining firms. Although her logit models had small explanatory power, Niden found no relationship between the tax paying status of target shareowners and the form of payment.

8.4.2 Bid Premia

A recent study by Asquith, Bruner, and Mullins (1986) focused directly on the impact of the form of financing on merger returns. Using a sample of 343 U.S. mergers over the years 1975–83, the authors found that equity offers were associated with significantly smaller returns to both bidders and targets than were cash offers. For targets they reported bid premia of 27.5 percent for cash bids and 13.9 percent for equity bids. For bidders, those using cash earned 0.2 percent and those using equity earned −2.4 percent, although for relatively large

targets the figures were 0.95 percent and −5.39 percent, respectively. Abnormal losses were positively related to the relative size of the acquisition. The findings suggested that differences in merger returns between alternative forms of financing can completely explain the differences recorded between returns in mergers and those in tender offers.

Controlling for whether a merger was horizontal or conglomerate in nature, Wansley, Lane, and Yang (1983) found acquiree bid premia of 31.5 percent in 102 cash bids and 16.8 percent in 87 securities offers. They concluded that higher bid premia are required in cash acquisitions to compensate for capital gains tax liabilities. Niden (1986) also uncovered higher bid premia to acquirees in taxable acquisitions . Dividing U.S. acquisitions over the years 1963–77 into 230 taxable (largely all-cash) and 318 tax-free (mainly all equity) acquisitions, she reported bid premia of 25.4 percent and 11.9 percent, respectively.

No similar studies of the United Kingdom have been undertaken. Nevertheless, Eckbo and Langohr (1986), in a study of bid premia in French takeovers from 1966 to 1980, found that the average offer premia were significantly higher in the 50 cash offers (53 percent) than in the 49 exchanges of securities (20 percent).

The most consistent result to emerge from these previous studies is that bid premia are significantly higher in cash acquisitions than in equity offers. We provide further evidence on this below.

8.5 Data and Methodology

8.5.1 Sample

Our sample contains data from both the United Kingdom and United States, constructed in parallel fashion. For the U.K. data we started with an exhaustive set of almost 1,900 acquisitions as recorded in the London Share Price Database (LSPD) for the period January 1955 to June 1985 (see Franks and Harris 1986a). The LSPD includes all U.K. companies quoted in London since 1975 and approximately two-thirds of the companies quoted before 1975, with a bias in favor of larger companies. For each acquisition we then gathered data on the means of payment from the Stock Exchange Year Book, which reports information from offer documents only where the acquirer is quoted. Financing data existed for 954 of the acquisitions.

For the U.S. data we extracted information on all firms, recorded in the Chicago Research in Security Prices (CRSP) files, that disappeared through acquisition during the period January 1955 to December 1984. The CRSP files cover all companies on the New York and American Stock Exchanges since 1962 and all firms on the NYSE since 1926. We

obtained data on means of payment from *The Capital Changes Reporter*. Our final U.S. sample contains 1,555 acquired firms with financing data, and 850 bidders. Using the *Wall Street Journal Index*, we classified takeovers as tenders or mergers based on when control first passed to the bidder. Thus, if the bidder purchased 60 percent of the target's shares via tender and the remaining shares via merger, the bid would be classified as a tender.

In cases where several acquisitions were made by the same bidder, the bidder was counted separately by each acquisition made.

8.5.2 Merger Dates

For each U.K. acquisition we have up to four key dates. The *first approach date* is the date when the Stock Exchange is first informed that merger talks are under way. The *first bid date* gives the date of the first formal merger offer. This is followed by an *unconditional date* when a sufficient proportion of shares has been pledged to the acquiring company to guarantee legal control. Finally, the *LSPD date* shows the last date for which stock returns data are available for the target, usually the delisting date. The first three dates are taken from records of the EXTEL Company, which collects and records such data. Not all acquisitions had four distinct dates. For example, the first bid date may not be preceded by a formal announcement of talks.

For each U.S. acquisition we obtained three key dates. The first mention of an acquisition in *The Wall Street Journal Index* was taken to be the *announcement date*. This date is often the actual bid date but may also be a positive indication of a forthcoming bid. We record dates of bid revisions, as well as the *final bid date*, the date of the bid that was ultimately successful. Finally, we record the *delisting date* for the acquiree's stock.

8.5.3 Share Price Data

Monthly rates of return are taken from the LSPD and CRSP files. In the United Kingdom these are calculated using jobbers' (market makers') price quotes (the average of the bid and the asking price) at the end of the final trading day of the month. Although traded prices are available, the order of prices during a day is not, thereby prohibiting identification of end-of-day traded prices. Jobbers' quotes may not be available on the last day of the month, either because the company's stock has been suspended or because the shares were not traded that day. If there were no jobbers' quotes on the last day of the month, we calculated the returns using a randomly selected traded price on the day of the month when the stock was last traded. The results were not appreciably affected when we used traded prices only instead of the price quote.

8.5.4 Abnormal Returns and Tests

To assess the effects of mergers on share prices, we use variations of event study methodology. Specifically, for any company j we define an abnormal return (ar_{jt}) as

$$ar_{jt} = r_{jt} - c_{jt}, \tag{5}$$

where r_{jt} is the continuously compounded realized return (log form) in month t (dividends plus capital gains), and c_{jt} is a control return that estimates shareholder returns in the absence of a merger. Time, t, is defined relative to an event date. For the U.K. mergers we use the first available of either the first approach, first bid, unconditional or LSPD dates; for the U.S. mergers we use the announcement date. Since specification of the control returns is controversial, we define control return in three alternative ways as described later in this section.

Company abnormal returns are then aggregated to form a portfolio abnormal monthly return (AR_t) defined as

$$AR_t = \frac{1}{N}\sum_{j=1}^{N} ar_{jt}, \tag{6}$$

where N is the number of companies in a particular portfolio, for example, the portfolio of acquirees. The statistical significance of AR_t is assessed with the statistic $TAR_t = AR_t/\sigma$, where σ is the standard deviation of the AR_t terms (assumed to be normally distributed) for a time period assumed to be unaffected by the merger. In the results reported here σ is calculated for the period $t = -71$ to $t = -12$. Given these procedures, TAR_t is distributed according to student's t- (distribution with 59 degrees of freedom. This procedure provides a crude adjustment for cross-sectional dependence, as discussed by Brown and Warner (1980). Alternatively, the statistical significance of AR_t is tested nonparametrically using the percentage of the ar_{jt} terms that are positive. This is accomplished by comparing the positive percentage to a binomial distribution when the probability of a positive return is 0.50.

To measure returns over a number of months, we calculate a cumulative abnormal return, CAR_t, as

$$CAR_t = \sum_{i=t_b}^{t} AR_i, \tag{7}$$

where t_b is the month at which the cumulation begins. Under the assumption that the AR_t estimates are independent, the significance of CAR_t can be assessed using the statistic $TCAR_t = CAR_t/\sigma_{CAR}$ where $\sigma_{CAR} = \sigma\sqrt{t - t_b + 1}$ and σ is estimated as described above. $TCAR_t$ is approximately a standard normal variate under the null hypothesis that CAR_t has a zero mean.

Although *CAR* is frequently used for assessing multiperiod returns, it can be unsatisfactory when companies disappear from the analysis because of nontrading or because companies are delisted or suspended close to the bid date. As an alternative to *CAR*, we construct company-specific multiperiod returns. These company "bid premia," bp_{jt}, are aggregated into portfolio bid premia, BP_t, defined as

$$BP_t = \frac{1}{N}\sum_{j=1}^{N} bp_{jt} = \frac{1}{N}\sum_{j=1}^{N} \sum_{i=t_b}^{t} ar_{ji}, \tag{8}$$

where the cumulation process begins at time t_b and includes those monthly abnormal returns which are observed up to and including month t. For example, if in month +1 two companies obtain an average residual of 10 percent and in month +2 only one survives (or is traded) and obtains a residual of 5 percent, the *CAR* for the two months according to equation (7) is 15 percent, and 12.5 percent according to equation (8). We assess the statistical significance of *BP* using the statistic $TBP = BP/\sigma_{BP}$, where $\sigma_{BP} = \sigma\sqrt{T}$, and T is the average (across companies) number of months for which return data are available to form *BP*. *TBP* is the analogue of $TCAR_t$ shown above.

The calculations of *TBP* and *TCAR* both use σ specified as the standard deviation of abnormal returns for some time period removed from the merger. It can be argued that there are transitory (or permanent) risk shifts associated with mergers that might not be captured by our calculation of σ. As an alternative procedure, we calculated statistics based on the cross-sectional standard error of company-specific bid premia (bp_{jt}). This "cross-sectional" t is calculated as BP/SE, where $SE = SD/\sqrt{N}$, and SD is the cross-sectional standard deviation of the bid premia for the N companies averaged to get *BP*. In general, the results using these cross-sectional t-statistics are quite comparable to those using *TBP* and *TCAR* discussed above.

8.5.5 Control Returns

Brown and Warner's (1980, 1985) simulation results on both monthly and daily data suggest that relatively straightforward procedures are as powerful as more elaborate tests in detecting abnormal returns (see also Brown and Weinstein 1985). To see whether the specification of control returns affects our results, we use three alternate models to determine c_{jt} using the following equation:

$$c_{jt} = \alpha_j + \beta_j rm_t.$$

In the first model, the market model, values for α and β are estimated by regressing r_{jt} on rm_t for the 60-month period beginning at $t = -71$. Because of the documented effects of infrequent trading in the United Kingdom on estimated parameters (Dimson and Marsh (1983)), α and

β for the United Kingdom companies are adjusted for thin trading using Dimson's (1979) method for the same 60-month period.[4] In the second model we set $\alpha = 0$ and $\beta = 1$ for all firms. The third model is based on the capital asset pricing model and sets $c_{jt} = rf_t + \beta_j (r_{mt} - r_{ft})$, where β is from the market model and rf_t is the yield on a government obligation. For the United Kingdom we use the yield on three-month Treasury obligations converted to a one-month yield basis. For the United States we use yields on one month Treasury bills.

8.6 Forms of Financing in U.K. and U.S. Acquisitions

We first describe the different forms of financing used in our samples of U.S. and U.K. acquisitions, the importance of each form, and the trends over the 30-year period. We then assess whether these patterns of financing are consistent with the predictions of the theories reviewed in section 8.3.

8.6.1 Means of Payment

Table 8.1 shows that all-cash offers and all-equity offers were the two most widely used means of payment in both countries. Together these two types of offers constituted almost one-half of the successful U.K. takeovers and over two-thirds of the U.S. offers. In the United Kingdom an additional one in five acquisitions involved either a combination of cash and equity or the seller's option to receive either all cash or all equity. In the "all cash or all equity" case, each shareholder of the target may elect to receive all cash or all equity. The bidder will provide the cash from its own resources or through an underwriter. In the latter case, shareholders of the target tender their shares to the bidder, which then issues new shares to the underwriter (on the basis of the bid terms); the underwriter then remits the amount prescribed by the cash alternative to the tendering stockholders.

These "all cash or all equity" offers have become increasingly prevalent since 1979. One reason is that they provide shareholders who are liable to pay capital gains taxes on realized gains (if they receive cash) with an equity alternative, and others, who do not want the bidder's paper in their portfolio, with cash. The offer is tax and transaction cost efficient. The role of the underwriter may be twofold: It simply provides a source of cash for a cash-hungry bidder; and it provides a signal to the market of the value of the bidder's equity from an informed (or partially informed) trader. This informed trader must agree to purchase any shares at a predetermined price whenever a target shareholder elects to take the cash alternative. This role may be especially important where the acquisition is relatively large and where there is great uncertainty as to the value of the offer to the bidder.

Table 8.1 **Mediums of Exchange in U.K. and U.S. Acquisitions, in Proportions, 1955–85**

	U.K.	U.S.
A. Method of Payment		
All cash	.253	.306
Cash *or* debt	.016	.003
All debt	.014	.014
All cash or (cash plus equity)	.035	.001
Cash plus equity	.101	.009
Cash *or* equity[a]	.100	.013
Convertibles	—	.118
Equity plus debt	.048	.003
Equity plus convertibles	—	.073
All equity	.246	.371
Other[a]	.189	.090
Total	1.00	1.00
B. Use of Cash, Equity and Debt[b]		
At least some equity[c]	.660	.601
At least some cash or some debt	.633	.404
At least some cash	.538	.356

[a]The "*or*" denotes that the seller has the option to receive either form of payment. The option to receive "cash or equity" has become increasingly popular since 1978. Before then the ratio of "all equity" to "all cash or all equity" was 3.27, but during 1978–84 it fell to 1.17. The "other" category includes various mixtures of cash, equity, and debt, as well as other types of payment (such as preference stock). In the U.K. sample the largest single category involves mixtures subsequent to recapitalizations (.083).

[b]Categories are not mutually exclusive so that percentages sum to more than 100. The data include mixture offers after recapitalizations.

[c]For purposes of this tabulation, securities convertible into common equity are treated as equity.

Unlike in the United Kingdom, the cash alternative and cash-equity combinations have not been significant in the United States. All debt offers were rare in both countries, and combination offers involving debt are infrequent, though more common in the United Kingdom. A striking contrast between the two countries is in the use of convertibles securities. In the United States 11.8 percent of takeovers involved full payment with convertibles (such as convertible preferred stock), and an additional 7.3 percent were combinations of equity and convertibles. In the United Kingdom the use of convertibles was negligible.

Panel B shows that a larger proportion of U.K. takeovers than U.S. takeovers involved at least some cash or some debt. In addition, a slightly larger proportion of U.K. offers involved at least some equity. These figures reflect the greater use of combination offers in the United Kingdom.

Table 8.2 divides the entire 30-year period into five-year blocks, and figure 8.1 displays the results by year. In the United States all-cash

Table 8.2 **Time-Series of the Forms of Payment in U.K. and U.S. Takeovers, Using an Equally Weighted Basis**

	U.K.			U.S.			
Period	N	All Cash	All Equity	N	All Cash	All Equity	Some Use of Convertibles[a]
1955–59	65	.354	.354	69	.000	.768	.072
1960–64	89	.292	.404	121	.008	.669	.248
1965–69	156	.186	.244	386	.013	.381	.500
1970–74	139	.230	.237	177	.192	.599	.107
1975–79	247	.336	.231	373	.491	.247	.070
1980–84	205	.205	.190	429	.585	.228	.054
1985	53	.094	.170	—	—	—	—
Average[b]	954	.253	.246	1,555	.306	.371	.191

Note: Entries are proportions of the sample (N) with a type of offer.

[a]These are offers that are equity plus securities convertible into equity or which are solely convertible.

[b]Averages are weighted by the number of mergers.

takeovers were not observed in our sample until 1965, but after that they became increasingly important.[5] At the same time, all-equity offers fell from three-quarters of U.S. takeovers in the late 1950s to less than one-quarter in the 1980s. This striking increase in the use of cash occurred over a period in which the Williams Act (1968) and its extension (1970) imposed more stringent requirements on cash offers. In contrast, in the United Kingdom financing proportions fluctuated considerably over the 30 years of the study.

Table 8.2 also demonstrates that the heavy use of convertibles in the United States was largely a phenomenon of the 1960s. Over the years 1965–69 fully one-half of United States bids involved convertible securities. By the 1980s the proportion had fallen to only 5.4 percent. The downturn in takeover financing with convertibles was probably due to changes in U.S. tax law and accounting standards. Enactment of Section 279 of the tax code in 1969 eliminated the tax deductibility of interest payments on convertible debt expressly issued for acquisitions. In addition, Accounting Principles Board Opinion 15, issued in 1969, required the reporting of earnings per share on a fully diluted basis. This change may have reduced the incentive to issue convertibles because of the impact of earnings dilution on contractual arrangements, for example, in bond covenants. Also, managers and investment bankers may have been apprehensive about investor reaction to even only cosmetic reductions in earnings per share.

The proportions in both tables 8.1 and 8.2 were calculated on an equally weighted basis. Table 8.3 provides the proportions of all-cash

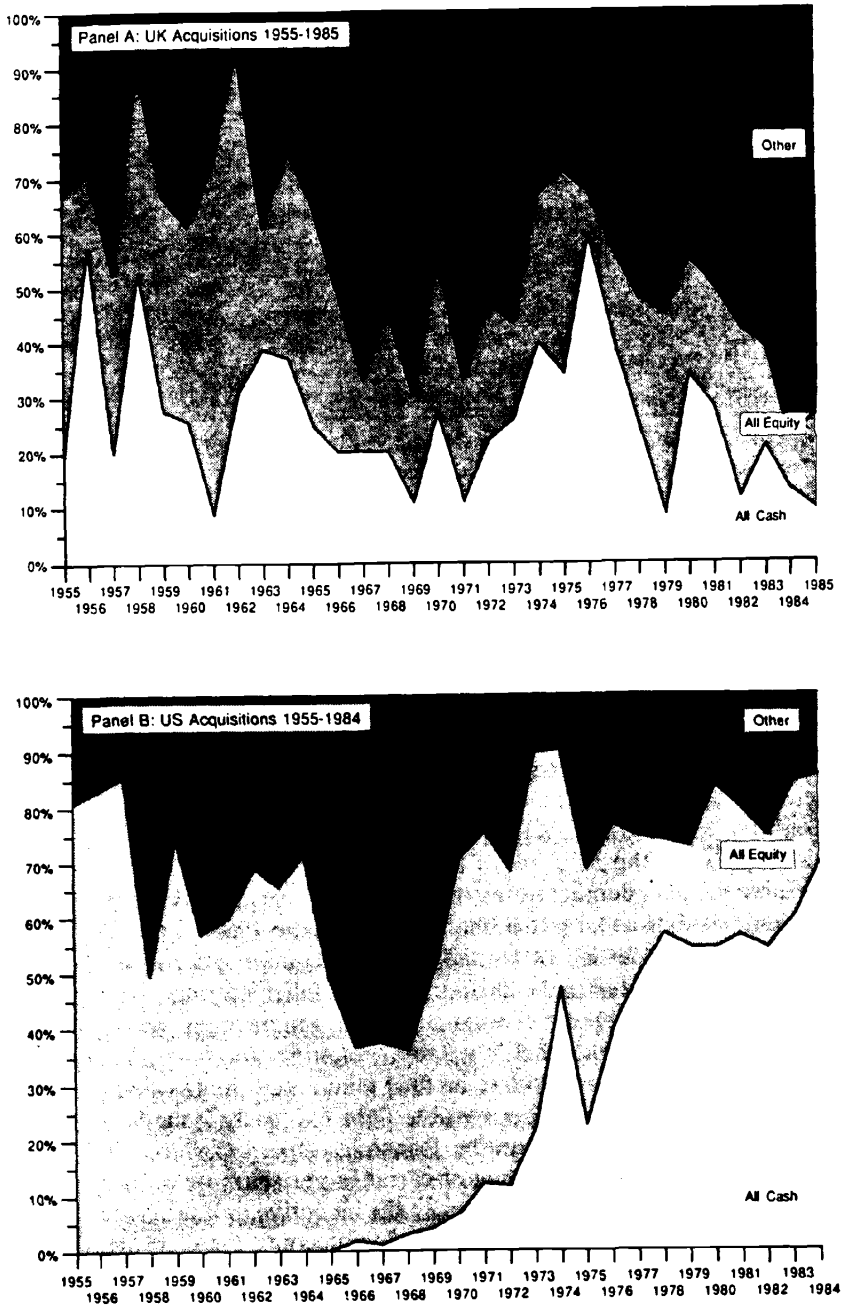

Fig. 8.1 Time-series of acquisition payment type

Table 8.3 **Forms of Payment in UK and US Takeovers, on a Value-Weighted Basis**

	U.K.		U.S.	
	All Cash	All Equity	All Cash	All Equity
1955–59	0.23	0.67	0.0	0.84
1960–64	0.08	0.67	0.0	0.61
1965–69	0.08	0.26	0.01	0.37
1970–74	0.28	0.12	0.21	0.60
1974–79	0.38	0.30	0.38	0.28
1980–84	0.35	0.14	0.39	0.38

Note: Entries are a proportion of the total. Weights are based on market value of the shares of the acquired company.

and all-equity offers based on the market value of the acquisitions. In the United States the proportion of bids that were all cash on a value-weighted basis was almost identical to the equally weighted proportion for the period 1955 to 1974. After 1974 cash offers constituted a smaller proportion on a value-weighted basis than on an equally weighted basis, suggesting that cash offers were used more frequently in smaller acquisitions. For all equity offers the equally weighted and value-weighted results are very close, except for during the years 1980–84.

In the United Kingdom the proportion of all cash offers on a value-weighted basis was appreciably lower than that on an equally weighted over the years 1955–69. The converse was true for the years 1970–84. Over the entire 30-year period the proportion of bids that were all cash was 0.25 on both an equally weighted basis and a value-weighted basis. For the all-equity figures there was no consistent relationship between the value and equal weightings. In aggregate the all-equity proportion on a value-weighted basis was 0.20, whereas it was 0.25 on an equally weighted basis.

8.6.2 Theoretical Predictions and the Evidence

The data shown in tables 8.1 through 8.3 provide some support for the prediction of hypothesis 1 that the use of cash in acquisitions should be inversely related to the capital gains tax rate. The introduction of capital gains taxes in the United Kingdom in 1965 coincided with a decline in the proportion of cash-financed acquisitions from an average of 29.2 percent in 1960–64 to 18.6 percent in 1965–69. This decrease was short-lived, however, and by 1975–79 the proportion had returned to 33.6 percent.

Hypothesis 2—the proposition that cash acquisitions are most prevalent in an environment, such as the United Kingdom, where share

repurchases are prohibited—is contradicted by the finding that the proportion of all-cash bids was greater in the United States than in the United Kingdom. But in large part cash acquisitions in the United States began only in the 1970s. Their marked growth may reflect more widespread election of stepped-up basis. Rising inflation in the 1970s increased the benefits of raising the basis for determining depreciation allowances from historic to current prices. Since the stepped-up basis was not available in the United Kingdom, an equivalent trend did not occur there.

The U.K. financing proportions reported here are most informative about the trapped equity hypotheses. Since the trapped equity model is a description of the incentives to make cash distributions through acquisitions, it is worth recalling that a high proportion of acquisitions use "all equity"—in fact, the proportion is as large as that of "all cash". The theory cannot explain the all-equity class of acquisitions. More strikingly, the cycles of merger activity that have been widely observed, and which are an important component of the empirical relationship that King (1986) estimated between the value of acquisitions and stock market prices, do not appear to coincide with peaks in cash-financed acquisitions. According to figure 8.1 the particularly pronounced U.K. merger booms of 1968 and 1972 did not coincide with large upswings in the proportion of cash-financed acquisitions.

Still more troublesome for the trapped equity hypothesis is the poor association between the tax disincentive for dividend distributions and the level of acquisitions using cash. Recall from hypothesis 3 that the incentive for cash acquisitions is increasing in the tax wedge. Over the period under study a number of important tax changes in the United Kingdom should have affected this wedge. Most obviously, the introduction of the corporation tax in 1965 was associated with an increase in the tax price of retaining assets in the corporate sector. The incentive to distribute cash thus rose appreciably in 1965. But figure 8.1 shows that this coincided with a period during which the proportion of cash-financed acquisitions declined. Moreover, the introduction of the imputation tax in the United Kingdom in 1973 should have, in theory, lessened the tax price of retaining assets in the corporate sector. Imputation is a tax credit attributed to shareholders for the payment of corporation tax on the profits underlying a distribution. In 1973, 35 percent of the 52 percent corporation tax was imputed to investors' personal income tax. The corporate tax wedge was therefore only 17 percent, 23 percentage points lower than it was before 1973. Figure 8.1 records, however, that the introduction of imputation was associated with a period in which the proportion of cash acquisitions sharply increased, peaking in 1976.[6]

To summarize, the financing proportions provide little support for the trapped equity model but offer some tentative support for an influence from capital gains tax. The appreciable rise in cash-financed acquisitions in the United States over the period studied can be attributed, at least in part, to tax benefits from stepped-up basis.

8.7 Wealth Effects for Bidder and Target around the Announcement Date

In this section we examine bid premia associated with different means of payment. We discuss, in turn, bid premia around the announcement date in all-cash and all-equity offers; share price changes before the announcement; results for "mixed bids"; the effects of other characteristics of takeover, namely, whether the bids are revised or contested and whether they are tender offers; and finally a cross-sectional regression controlling for these bid characteristics.

8.7.1 Bid Premia in All-Cash and All-Equity Offers

Table 8.4 presents data on bid premia for all-cash and all-equity offers in both countries. Since the results are essentially the same using all three models of control returns, we report only those for the market model. Panel B shows that U.S. acquirers were more than seven times larger than targets in all-cash offers and almost nine times larger in all-equity offers. U.K. acquirers were more than twelve times larger than targets in all-cash offers and more than six times larger in all-equity offers.

Target Shareholders

Panel A in table 8.4 shows that in both countries the bid premia for target shareholders were markedly higher in all-cash offers than in all-equity offers. The month 0 results for the United Kingdom, for example, indicate targets with all-cash offers earned a 30.2 percent bid premium, which was significantly higher than the 15.1 percent premium in all-equity offers. The t-statistic[7] comparing the two figures is 9.49. The differences in the United States are even more dramatic, with the month 0 premium of 11.1 percent in all-equity offers being less than half the all-cash figure of 25.4 percent. We thus find strong evidence that target shareholders receive larger wealth gains in all-cash takeovers than those involving all equity. This observation is consistent with hypothesis 1, the capital gain tax thesis that higher bid premia are required in cash offers to compensate for the capital gains tax liability; with hypothesis 4, the Myers and Majluf argument that there are negative

Table 8.4 **Bid Premia and Market Capitalization in All-Cash and All-Equity Offers**

	A. Bid Premia[a]			
	Month 0		Months −4 to +1	
	U.K.	U.S.	U.K.	U.S.
Acquirees				
All cash	.302	.254	.305	.363
	(28.07)	(42.29)	(11.56)	(24.67)
All equity	.151	.111	.182	.156
	(12.88)	(25.90)	(6.34)	(14.86)
Acquirers				
All cash	.007	.020	.043	.026
	(.75)	(3.56)	(1.98)	(1.89)
All equity	−.011	−.009[b]	.018	.006
	(−.95)	(−2.23)	(.63)	(.61)

	B. Market Value (in millions)[c]			
	U.K.		U.S.	
	All Cash	All Equity	All Cash	All Equity
Acquirees	£ 11.1	£10.6	$ 144.4	$ 134.8
Acquirer	136.1	64.3	1,019.0	1,177.0

Note: Entries are bid premia; *t*-statistics in parentheses.
Cross-sectional *t*-values for bidder wealth gains are:

	Month 0		Months −4 to +1	
	U.K.	U.S.	U.K.	U.S.
All cash	.95	2.99	3.05	2.05
All equity	−1.27	−2.14	.97	.67

where the *t*-value is calculated as BP/SE and where $SE = SD/\sqrt{N}$ and SD is the cross-sectional standard deviation.

[a]Bid premia are calculated using the market model. In the United Kingdom month 0 is the earliest available of the first approach, first bid, unconditional, or LSPD date. In the United States month 0 is the announcement date as defined in the text.

[b]For U.S. acquirers with all-equity offers, where the bid premia are −0.009 for month 0, only 45.7 percent of the 443 acquisitions were positive. The results using a model with $\alpha = 0$ and $\beta = 1$ were virtually identical.

[c]The market value of equity prior to takeover.

signals associated with equity offers; and with the Fishman argument that cash offers coincide with high-value acquisitions.

A comparison of the results for the two countries over the six-month period suggests all-cash bids coincided with slightly higher bid premia in the United States than in the United Kingdom (.363 versus .305), and the differences were statistically significant at better than the .10 level ($t = 1.92$). Comparing the month 0 and month -4 to $+1$ results, we find a greater proportion of the U.S. bid premia in all-cash offers appear to have come prior to month 0. Turning to the all-equity bids, we find the U.K. bid premia were somewhat higher than the U.S. premia (.182 versus .156), though not statistically so when measured over the six-month period ($t = 0.85$).

Bidder Shareholders

Shareholders in the U.K. acquirers earned negligible returns in the bid month for both all-cash and all-equity offers. Over the six-month period, however, small (statistically significant) gains accrued for the all-cash offers. Whether this gain was a result of the bid or of the bidder's timing the offer to correspond to favorable developments in its stock price is uncertain. There is no evidence, however, of significant losses to bidders in U.K. takeovers around the merger announcement date. The results for all-equity offers are similar to those found by Marsh (1979) for the month following the rights issue announcement (results showing small abnormal losses at the time of the announcement).

The difference between the performance of all-cash and all-equity acquisitions in the United States is striking. In all-cash offers the bidders earned significantly positive gains of 2 percent in month 0. In contrast, in all-equity offers they experienced a significant loss of 0.9 percent. These wealth effects were also significantly different from each another ($t = 4.19$).[8]

Taken together, our U.S. results suggest that equity in acquisitions conveys bad news, while cash conveys good news. This role for the medium of exchange is consistent with theoretical predictions (see, for example, Miller and Rock 1985) and with empirical evidence on new equity issue announcements. Smith (1986), surveying an extensive literature on new equity issues, reported a weighted average loss of 1.6 percent. Our results also strongly support Myers and Majluf's predictions described in hypothesis 4.

Our U.K. results indicate the returns to all-equity bidders in the bid month were negative but not statistically different from zero. It is interesting to consider the institutional differences between the two countries. U.K. underwriters play a much more important role in equity issues than do their U.S. counterparts. For example, virtually all new U.K. equity issues have taken the form of rights issues, and virtually all have been underwritten (see Marsh 1979). According to Heinkel and

Schwartz (1985), the underwriter may be able to avoid some of the information problems that would otherwise be associated with equity issues.

Table 8.5 compares U.K. bid premia around the announcement date of acquisitions for the periods 1955–64 and 1965–85. The significance of 1965 is that it was in that year that the government instituted a full capital gains tax. According to hypothesis 1, bid premia in all-cash acquisitions should have differed from those in all-equity acquisitions only in the years after the tax was introduced. The table indicates that although the difference was larger in the later period, bid premia were significantly higher in all-cash offers than in all-equity offers ($t = 2.26$ in the announcement month) in the earlier period as well. Between 1962 and 1965 there was a short-term capital gains tax on holdings of less than one year. The difference between cash and equity bid premia persists prior to 1962, though the sample is too small to provide meaningful tests of significance. The hypothesis that capital gains taxes can entirely explain differences in the premia of the two kind of offers is therefore rejected.

8.7.2 A Comparison of the Premerger Performance of Bidders Using All Cash and Those Using All Equity

Anecdotal evidence from investment bankers in both the United Kingdom and the United States strongly suggests that they believe the choice of equity or cash is influenced by perceptions of overvaluation of the bidder's shares. We can look to the premerger share price performance of bidders for evidence that the premerger valuation of the acquirer may influence the choice of financing. If overvalued acquirers

Table 8.5 **A Comparison of U.K. Bid Premia Before and After 1965**

	Month 0		Month −4 to +1	
	1955–64	1965–85	1955–64	1965–85
Acquirees				
All Cash	.185	.327	.260	.317
	(6.28)	(29.26)	(3.60)	(11.60)
All Equity	.108	.166	.194	.177
	(6.39)	(11.17)	(4.67)	(4.86)
Acquirers				
All Cash	.032	.001	.072	.037
	(1.80)	(0.09)	(1.66)	(1.59)
All Equity	.005	−.017	.058	.002
	(0.30)	(1.22)	(1.32)	(0.07)

Note: Entries are bid premia; *t*-statistics in parentheses. Bid premia are calculated using the market model. Month 0 is the earliest available of the first approach, first bid, unconditional, or LSPD date.

choose equity, their premerger performance might be expected to be superior to that of acquirers offering cash.

The table below reports abnormal returns to acquirers for the period beginning six months before the bid and ending one month before the bid. The table shows U.S. bidders offering equity had slightly better performance over the prebid period than did those offering cash. The prebid performance of the two types of bidders was the reverse in the United Kingdom. Only very limited support is thereby provided for the hypothesis that overvaluation can be established from premerger data.

	Bid Premia	N
U.K. Bidders		
All cash	.050	198
	(t = 2.31)	
All equity	.034	150
	(t = 1.28)	
U.S. Bidders		
All cash	−.006	201
	(t = −.45)	
All equity	.024	442
	(t = 2.50)	

8.7.3 Other Types of Offers

In preceding sections the focus was on all-cash and all-equity bids since they are the primary types of bids made in both countries (see table 8.1). Table 8.6 presents additional estimates of the wealth effects of other types of bids.

"Cash or Equity" Offers

Combination offers provide the seller with the opportunity to accept either cash or stock. This option should reduce any detrimental personal tax effects associated with an all-cash offer. As shown in table 8.1, these offers have been made frequently in the United Kingdom but less often in the United States. In the United Kingdom target bid premia in combination offers were quite similar to those found in all-cash offers (table 8.4). For example, the 28.4 percent target bid premium (−4 to +1) in cash-or-equity offers shown in table 8.6 is very close to the 30.5 percent premium shown in table 8.4 for all-cash bids. The small sample size for the U.S. results (N = 20) prevents us from making any definitive statements, although target bid premia appear to be between those for all-cash and all-equity offers (Table 8.4). In neither country did these cash-or-equity offers coincide with significant bidder share price performance.

Table 8.6 **The Wealth Effects of Other Types of Offers**

	Acquirees		Acquirers	
Type of Offer	0	−4 to +1	0	−4 to +1
1. Cash or equity				
U.K. (N = 95)	.276	.284	.007	.075
	(14.79)	(6.21)	(.49)	(2.26)
U.S. (N = 20)	.180	.266	−.002	−0.010
	(8.41)	(5.07)	(−.09)	(−.18)
2. Cash and equity				
U.K. (N = 100)	.238	.271	.003	.054
	(18.70)	(8.71)	(.23)	(1.63)
U.S. (N = 15)	.099	.212	.057	.015
	(3.24)	(2.83)	(1.88)	(.20)
3. Convertibles only				
U.S. only (N = 184)	.117	.176	.018	.031
	(21.34)	(13.11)	(2.80)	(1.97)
4. Convertibles and equity				
U.S. only (N = 115)	.101	.143	−.004	.009
	(12.50)	(7.23)	(−.42)	(.39)

Note: Entries are bid premia; *t*-statistics in parentheses. Bid premia are calculated using the market model. The months are defined as in table 8.4.

These results are further evidence that personal tax considerations do not satisfactorily explain the higher target bid premia in cash offers since the equity-or-cash option, though tax efficient, led to bid premia comparable to those in all-cash offers. Thus, the evidence contradicts hypothesis 1.

"Cash and Equity" Offers

"Cash and equity" bids provide the seller with a combination of cash and equity and have been used frequently in the United Kingdom. They appear to offer targets smaller bid premia than do cash-or-equity or all-cash bids, but higher premia than all-equity bids. Furthermore, there are no significant wealth effects to bidders in acquisitions involving cash and equity. The pattern in these bids thus appears to be an average of the results for the all-cash and all-equity offers discussed earlier.

Convertibles

Convertibles were extensively used in the United States in the 1960s (see table 8.2). As shown in table 8.5, target premia for bids involving convertibles (either alone or along with equity) coincided very closely with target premia for all-equity bids. For example, in the United States the month 0 target bid premium was 11.1 percent in all-equity bids

(table 8.4), 11.7 percent in all-convertible bids, and 10.1 percent in bids involving both convertibles and equity. A major difference, however, has to do with the bidders. Whereas, as noted earlier, all-equity bids in the United States are associated with a negative wealth effect for acquirers in month 0, all-convertible bids were associated with a significant positive gain (1.8 percent) for acquirers in month 0.

8.7.4 Bid Premia: Further Analysis

Variations over Time

The differences in bid premia between all-cash and all-equity offers shown in table 8.4 may be attributable to variations over calendar years in the performance of acquisitions. This issue is less important in the U.K. data because all-cash and all-equity offers took place over the entire 30-year period in that country.

Table 8.7 **Wealth Effects in U.S. Acquisitions, Partitioned by Time and by Tender Versus Nontender**

A. Time

Time Period	Offer	Target N	Target BP Month 0	Target (t-stat)	Bidder N	Bidder BP Month 0	Bidder (t-stat)
1970–74	All cash	34	.252	(12.35)	21	.066	(3.41)
	All equity	107	.127	(10.88)	80	.006	(.57)
1975–79	All cash	185	.304	(27.84)	85	.012	(1.31)
	All equity	92	.169	(12.45)	75	−.014	(−1.46)
1980–84	All cash	249	.220	(32.39)	90	.018	(1.73)
	All equity	97	.145	(13.79)	64	−.039	(−3.99)

B. Tender vs. Nontender

Offer	Target N	Target Month 0	Target Month −4 to +1	Bidder N	Bidder Month 0	Bidder Month −4 to +1
Tenders all cash	135	.283	.411	78	.014	.025
		(35.20)	(20.87)		(1.84)	(1.34)
Tenders all equity	29	.201	.243	23	−.019	−.060
		(12.50)	(6.17)		(−1.13)	(−1.46)
Nontender all cash	340	.243	.343	123	.024	.026
		(31.66)	(18.24)		(3.00)	(1.33)
Nontender all equity	548	.106	.151	419	−.008	.009
		(22.75)	(13.23)		(−2.02)	(.93)

Note: Bid premia (*BP*) are calculated using the market model. Month 0 is the announcement date as defined in the text.

In panel A of table 8.7 we break our U.S. data into three five-year periods beginning with 1970, the onset of significant use of all-cash offers. As the figures show, the month 0 bid premium estimates for the targets was higher in all-cash offers than in all-equity offers in each of the five-year periods. The same patterns hold for the six-month bid premia (not shown here). In addition, in all-equity offers the wealth effects for bidders were consistently lower than in all-cash offers, and they were negative in both the 1975–79 and the 1980–84 period, though significantly so only in the latter. Panel A shows that differences between the wealth effects of all-equity and all-cash bids in the United States cannot be attributed to a particular time period.

Tender and Nontender Offers

Earlier research on acquisitions in the United States has indicated that shareholder wealth effects may be different in tender offers and mergers. For example, surveying a number of studies, Jensen and Ruback (1983) reported acquiree bid premiums of 30 percent in tenders but only 20 percent in mergers; for acquirers the figures are 4 percent and zero percent, respectively. Panel B of table 8.7 shows the data we used to investigate whether the disparity between wealth effects in all-cash and all-equity can be attributed to a greater use of cash in tenders. The data indicate that all-cash bids resulted in higher acquiree bid premia, whether the takeover was a tender or not. Furthermore, panel B suggests that after having controlled for the medium of exchange, a difference in bid premia remains between mergers and tenders. For example, the 28.3 percent premia in all-cash tenders (in month 0) is significantly higher than the 24.3 percent figure in all-cash offers that are not tenders ($t = 3.60$). Panel B also shows that a high proportion of tenders used cash as the form of financing.

Turning to the results for acquirers in Panel B, we find the announcement month wealth effect to acquirers making all-equity bids was negative in both tenders and nontenders, although the sample size is small for all-equity tenders. In contrast, the announcement month wealth effects were positive in all-cash offers whether the bid was a tender or not. Panel B therefore suggests that the medium of exchange and the response of acquirers' share prices are related.[9]

Revised and Unrevised Bids

In table 8.8 we use the U.S. data to test whether the differences in all-cash and all-equity bid premiums (partitioned by tender and merger) are due to the contested nature of the bids. We have evidence from Franks and Harris (1986a) that bid revisions, even when unaccompanied by contestants, show similar wealth effects to contested bids. As a result we partition offers into those that are unrevised and uncontested and those that are revised or contested.

Panel A shows, for unrevised bids, the target bid premia in all-cash tenders were slightly higher than those in all-cash mergers (with six-month bid premia of .384 and .345, respectively). The target bid premia were significantly higher in all-equity tenders (.258) than in all-equity mergers (.154). For bids that were revised or contested a similar pattern emerges, although the difference between tenders and mergers is larger. We can conclude that all-cash bids still provide much larger premia

Table 8.8 **Bid Premia for Multiple Bids (Revised or Contested) versus Single Bids (Unrevised and Uncontested), Partitioned by Tender and Merger, U.S. Data**

	Month 0		Months −4 to +1	
	Unrevised and Uncontested	Revised or Contested	Unrevised and Uncontested	Revised or Contested
A. Targets				
Mergers				
All cash	.247	.240	.345	.328
	(29.80)	(19.77)	(21.62)	(11.95)
	N = 297	N = 85	N = 297	N = 85
All equity	.106	.116	.154	.136
	(19.49)	(10.62)	(11.93)	(4.02)
	N = 505	N = 89	N = 505	N = 89
Tenders				
All cash	.267	.265	.384	.466
	(31.43)	(23.88)	(13.97)	(14.52)
	N = 103	N = 74	N = 103	N = 74
All equity	.242	.192	.258	.293
	(11.22)	(9.52)	(3.85)	(.71)
	N = 18	N = 14	N = 18	N = 14
B. Bidders				
Mergers				
All cash	.026	.016	.029	.023
	(3.13)	(.93)	(1.57)	(.61)
	N = 111	N = 32	N = 111	N = 32
All equity	−.005	−.023	.012	−.024
	(−1.12)	(−2.07)	(1.20)	(.95)
	N = 389	N = 68	N = 389	N = 68
Tenders	.016	.011	.026	.045
All cash	(1.96)	(.97)	(1.48)	(1.73)
	N = 67	N = 38	N = 67	N = 38
All equity	−.031	−.021	−.076	−.092
	(−1.19)	(−1.04)	(−1.26)	(−1.18)
	N = 14	N = 12	N = 14	N = 12

Note: Entries are bid premia; *t*-statistics in parentheses. Bid premia are calculated using the market model. Month 0 is the announcement date as defined in the text.

than all-equity bids even after controlling for the form and contested nature of the merger and that tenders still provide larger bid premia than mergers.

Table 8.8 also shows that a larger proportion of all-cash than all-equity bids are revised. If we look at the medium of exchange in the final bid, 28.4 percent of the all-cash bids were contested or revised, whereas only 16.5 percent of the all-equity bids were. From Fishman's model we might have expected the converse: His model predicts that contested bids will occur more frequently in low-value equity bids than in high-value cash bids. In the latter case, the bidder has placed a high value on the target and uses a cash offer to preempt competing bids. In fact, competition appears to be more closely associated with cash than with equity offers. It should be noted, however, that a final cash bid may have evolved from an initial equity bid, although Callison's (1987) data show that of 54 all-cash tenders, only one was preceded by an equity offer.

Panel B of table 8.8 shows the wealth gains for bidders. Gains to bidders appear small, and if anything they were larger in all-cash takeovers than in all-equity bids.

8.7.5 Cross-Sectional Analysis

To investigate further the patterns in acquiree bid premia, we estimate the following cross-sectional regression:

$$BP = a_0 + a_1D_1 + a_2D_2 + a_3D_3 + a_4D_4 + \epsilon,$$

where BP is the estimated bid premium

D_1 = 1 if all-cash offer, 0 otherwise

D_2 = 1 if tender offer, 0 otherwise

D_3 = 1 if contested bid, 0 otherwise

D_4 = 1 if revised bid, 0 otherwise

ϵ = a random error term with zero mean.

Only all-cash and all-equity offers in the United States are included in the regression. Furthermore, since the regression results are qualitatively similar for all three models of forming control returns, we report results for the market model only and bid premiums only for the six-month period around the announcement date. The results are (t-values in parentheses):

$$BP = \underset{(14.94)}{.163} + \underset{(6.43)}{.148D_1} + \underset{(3.15)}{.081D_2} + \underset{(1.66)}{.038D_3} + \underset{(.98)}{.025D_4}$$

$$R^2 = .08, \; F = 20.8$$

Although the regression has a low R^2, in part due to the measurement error for individual company bid premia, the F value of 20.8 is statistically significant at better than the .001 level. The results show that acquiree bid premia were larger in contested or revised bids and were significantly larger in tender offers (coefficient of .081). Even having controlled for these effects, however, the all-cash offers appear to coincide with larger acquiree bid premia. The coefficient of .148 (14.8 percent) is significantly different from zero at better than the .001 level. In fact, the medium of exchange has a larger impact than any of the other three effects. The regression results thus suggest that in the United States the medium of exchange is significantly related to bid premia and that this result is not an artifact of other commonly studied characteristics of the data.

We found qualitatively similar regression results for the U.K. data after controlling for schemes of arrangement, contested or revised bids, and time period (a series of dummy variables). The coefficient on D_1 was .104 with a t-statistic of 2.74.

8.8 Postmerger Performance

In their review of studies on U.S. acquisitions, Jensen and Ruback (1983) suggested several possible reasons for the common finding of negative returns following merger. They concluded (p.22) that "explanation of the post-event negative abnormal returns is currently an unsettled issue." Table 8.9 reports estimates of postmerger performance in all-cash and all-equity bids. The results are calculated as the average cumulative return—*BP* from equation (8)—over the two-year period covering months +1 to +24. For the purposes of measuring postmerger performance in the United Kingdom, month 0 is the date when the merger was unconditionally accepted; and for the United States, it is the date of the final bid. Four methods of forming control returns are used to test the robustness of the results.

8.8.1 Results for the United States

Panel A of table 8.9 shows that in the United States there is a marked difference between the postmerger performance of all-cash and all-equity bids. Acquirers using all cash did better after merger than did all-equity bidders, no matter what control return is used. The control returns (benchmarks) do, however, give rise to quite different figures for whether postmerger performance is positive, zero, or negative. These results highlight the importance of forming an efficient benchmark (see Grinblatt and Titman 1986).

Table 8.9 **Postmerger Performance in All Cash and All Equity Acquisitions**

A. *United States*

	Premerger α, β Market Model[a]	α = 0 β = 1.0	CAPM[b]	Postmerger α, β Market Model[c]
All cash	.028	−.036	−.034	.094
	(.70, 55)	(−1.03, 52)	(−.95, 51)	(1.59, 53)
All equity	−.184	−.179	−.178	−.018
	(−7.73, 36)	(−9.31, 34)	(−8.97, 34)	(−.69, 46)

	α	β	N
All cash			
Premerger	−.003	.99	201
Postmerger	−.007	1.04	127
All equity			
Premerger	.000	.99	442
Postmerger	−.006	.99	392

B. *United Kingdom*

	Premerger α, β Market Model[a]	CAPM[b]
All cash: N = 221	.017	.175
α = .008, β = 1.07	(.50, 53)	(6.09, 65)
All equity: N = 207	−0.094	.042
α = .011, β = 1.07	(−2.31, 51)	(1.23, 64)

Note: Entries are bid premia for months +1 to +24. For the U.K., results month 0 is the unconditional date of the merger. For the U.S., results month 0 is the date of the final bid. The figures in parentheses are *t*-statistics and percent positive. For this table, the *t*-statistic is calculated as *BP*/*SE*, where *SE* is the standard error of the mean.

[a]A market value–weighted average of α and β values for the acquiree and acquirer were also used as parameters in the market model to determine control returns. They showed very similar results as the unweighted parameters.

[b]When β was estimated as the market value–weighted average of betas for the acquiree and acquirer, the results were similar. CAPM is the capital asset pricing model.

[c]The α and β values here are calculated over period $t = +25$ months to +60 months (with a minimum of 24 months of data).

Using either a market model with "premerger" estimated parameters (calculated from six years to one year prior to the bid) or a simple $\alpha = 0$, $\beta = 1.0$ model, we find postmerger abnormal returns were essentially zero in all-cash offers but significantly negative in all-equity offers. It can be argued, however, that these results reflect the use of an inappropriate benchmark, since there may be shifts in a firm's expected returns and risks associated with acquisitions.[10] We therefore estimated α and β values in the market model from a postmerger period

producing essentially zero postmerger returns for all-equity offers and positive (though not statistically significant) postmerger returns in all-cash offers. These changes stem from the noticeable reductions in the estimated α values when going from the premerger (six through one years before the bid) to the postmerger (three through five years after the bid) period. The average postmerger α values are negative for both all-cash and all-equity offers.

In summary, acquirers that made all-cash bids on average did not suffer postmerger losses and did better than the bidders that made all-equity offers. Whether all-equity bidders have postmerger losses depends on the benchmark employed. Compared with premerger performance, postmerger returns are negative. But using a benchmark based on postmerger parameters, we find all-equity acquirers did not experience abnormal losses in the two years after an acquisition, but they did have negative α values three to five years after the acquisition.

Given the heavy use of equity in the 1960s, a possible explanation for these different results for cash and equity offers is that they are due to the date of the takeover rather than the medium of exchange.[11] Nonetheless, we found qualitatively similar results (using premerger parameters) when we divided the post-1970 subsample into five-year subperiods (post 1970). The results suggest that the medium of exchange plays an important role in the postmerger performance of acquiring firms in the United States. We can speculate that this role may be related to information asymmetries that may motivate equity rather than cash bids in situations in which the acquirer's equity is overvalued by the market.

8.8.2 Results for the United Kingdom

Panel B of table 8.9 shows that postmerger performance results in the United Kingdom are highly dependent on the formation of control returns. As in the United States, all-equity offers had significantly worse postmerger performance than did all-cash offers. The difference appears to be in the 11 percent to 15 percent range. For example, using the market model, we find postmerger performance in all-equity offers was -9.4 percent, which is 11.1 percentage points lower than the 1.7 percent return in all-cash offers.

The issue that remains unresolved is whether postmerger performance in all-equity takeovers was less than zero. The significant negative figures resulting from use of the market model were essentially the result of the very high premerger α values for the acquirers in all-equity deals ($\alpha = 0.011$ per month, or over 12 percent per year). If one applies the capital asset pricing model, the all-equity takeovers appear to have had small positive bidder returns after merger, and in all-cash offers the bidders had large positive returns of 17.5 percent.

As was the case in the United States, further exploration of these results will be necessary.[12]

8.9 Conclusion

In this paper we have examined the means of payment used in a large set of acquisitions in the United Kingdom and the United States over the years 1955–85. Using data on financing proportions, bid premia, and postmerger performance we tested the validity of several tax and information hypotheses in the literature. Our findings show that it is difficult to explain many of the results in terms of tax effects. The capital gains tax did not appear to be a primary determinant of financing patterns in the United Kingdom during a period in which there were substantial variations in the tax rate. Our data also show that the "trapped equity" model is inconsistent with financing patterns. We could not reject stepped-up basis as an explanation for the substantial increase in cash-financing proportions in the United States, but our data were insufficient to provide a convincing test.

The second set of empirical results we presented concerned wealth gains around the announcement of mergers. In both countries we observed that the bid premia associated with cash bids were much larger than those associated with equity bids. This finding is consistent with Fishman's model that high-valuing bidders make cash offers, and low-valuing bidders make securities offers. After controlling for the form of finance, we found that much of the difference in bid premia between tenders and mergers disappeared. We also examined whether the effects of revised or contested bids could explain the higher bid premia accruing to targets in cash offers than to those in equity offers. After controlling for the form of takeover (tender versus merger) and the contested nature of the bid, we found that cash offers still provided substantially higher wealth gains to shareholders. Moreover, U.S. bidders that offered all equity suffered significant abnormal losses at the time of the bid announcement, consistent with the findings on the wealth effects of seasoned new equity offerings in the United States. Finally, acquirers that made cash offers had better postmerger performance than did those that made all-equity offers. These results support an overvaluation hypothesis, but they are inconsistent with theories of efficient capital markets.

Our findings suggest at least two directions for future work. First, because our results on postmerger performance were sensitive to the benchmark used, further investigation of this topic is warranted (see Loderer and Mauer, 1986). Second, after focusing on the means of payment in takeovers, we believe further insights into the relationships between financing decisions and acquisition performance could be gained by incorporating detailed information on the capital structures of the merging firms.

Notes

1. King's model contains no feature that distinguishes between acquisitions and new investment.

2. It is crucial to Myers and Majluf's argument that all projects have a zero or positive net present value (see idem., 203–4) If projects could have a negative net present value, giving up a new project and not issuing equity may not be good news.

3. Jensen's (1986) theory of free cash flow could also be used to yield the same prediction, since increasing the debt ratio of the bidder (via a cash offer) enables managers to bond their promise to pay future cash flows. See also Grossman and Hart (1982).

4. For the earliest calendar years of our U.K. analysis, prior data were unavailable to calculate α and β. In these cases companies were assigned $\alpha = 0$, $\beta = 1.0$. Our adjustment for thin trading regresses company returns on the market return and one-month leads and lags on the market. The three coefficients in the multiple regression were summed to obtain β.

5. Data from W. T. Grimm show the same upward trend in the use of cash in U.S. acquisitions (and the same decline in the use of stock) beginning around 1970, although the data also reveal that cash was used in the 1960s (the series begins in 1964). Differences in samples probably account for variations in financing proportions. Grimm's data include acquisitions and divestitures of both public and private companies, whereas our data are limited to acquisitions of exchange-listed companies. The latter are, on average, larger concerns.

6. An examination of Department of Trade and Industry (DTI) data on the financing of acquisitions reveals similar changes in financing proportions around the time of the major tax changes discussed here. These data differ from ours primarily in the population from which their samples are drawn. Our data refer to acquisitions by companies that were quoted on the London Stock Exchange. The DTI data are obtained from reports in the British financial press about mergers and acquisitions. We would argue that there is some merit in using data on quoted companies in a study of the financing of acquisitions, on the grounds that the impediments to the choice of financing are less for quoted than unquoted companies. A comparison of the two samples is outlined below.

	Proportion (value-weighted) financed by cash:	
Years	Our sample	DTI sample
1970–74	0.28	0.32
1975–79	0.38	0.59
1980–84	0.47	0.54†

†Up to the third quarter of 1983 only.

7. Significance tests for the difference between two cell means ($M_1 - M_2$) are based on a t-statistic calculated as $t = (M_1 - M_2)/SD$, where $SD = \sqrt{\sigma_1^2 + \sigma_2^2}$ and σ is the standard deviation used to calculate the bid premia (BP) for the cell mean; in other words, $\sigma_1 = \sigma_{BP}$ for cell 1.

8. As confirming statistical tests, we examined the percentage of companies with positive returns and an alternate method of calculating a t-statistic. For the 200 acquirers making all-cash bids, 59 percent had positive abnormal returns

in month 0, whereas only 46 percent of the 442 acquirers in all-equity bids had positive abnormal returns in that month. We also calculated a t-statistic defined as the mean abnormal return divided by the standard error of the mean. For month 0 this produced $t = 2.99$ in all-cash bids and $t = -2.14$ in all-equity bids.

9. In our U.K. sample over 90 percent of the acquisitions took a form similar to that for the U.S. tenders (see Franks and Harris 1986a), the remaining 10 percent having been schemes of arrangement that required a shareholders' meeting convened under a court's direction. In schemes of arrangement the merger can be consummated if more than 75 percent of the votes cast by those present and voting are in favor of the proposal. Because of the relatively small number of schemes of arrangement, any differences in results for this type of merger are not likely to have a large effect on our U.K. results. Nonetheless, we partitioned our U.K. data into schemes of arrangement that were all-cash bids and those that were all-equity bids. The target bid premia were significantly lower in all-equity bids than in all-cash bids.

10. For example, the merger is combining two firms and hence may change the business mix of the acquirer (but see notes *c* and *d* of table 8.9). In addition, a cash offer may be accompanied by an increase in financial leverage, thus increasing risk. Providing some support for this is the fact that in all-cash offers the postmerger β (1.04) exceeded the premerger β (.99).

11. We also examined use of a value-weighted market index in measuring postmerger performance in the United States. Using an $\alpha = 0$, $\beta = 1.0$ model with a value-weighted index, we found all-cash acquirers had positive (.06) abnormal returns over the 24-month period ($t = 1.71$), whereas all-equity acquirers still displayed significant negative postmerger performance (of .111, $t = -5.54$). To further examine the role that firm size may play in postmerger performance in the United States, we subdivided the sample into quintiles and measured the postmerger performance of each portion. The smallest acquirers appeared to outperform the largest acquirers when we used both a market model (with postmerger α and β values) and an $\alpha = 0$ and $\beta = 1$ model. The results were:

Ranking by Market Capitalization	$\alpha = 0$, $\beta = 1$, N = 195	Postmerger Market Model	
1 Smallest	−.078	.009	N = 153
2	−.102	.030	N = 164
3	−.135	.063	N = 169
4	−.194	−.104	N = 165
5 Largest	−.174	−.098	N = 145

12. One possible explanation for our postmerger performance results may be related to size effects not captured in our formation of control returns (see Dimson and Marsh 1986). We have some evidence suggesting, however, that such size effects cannot fully explain our results. First, as shown in table 8.4, in the United States the average size of all-equity and all-cash acquirers was quite similar both before and after merger. In the United Kingdom all-cash acquirers were larger than all-equity acquirers. As a result, we cannot explain the poorer postmerger performance of the all-equity acquirers on the basis of

their being larger than the all-cash acquirers. Second, our use of postmerger parameters (α and β) should capture, at least in part, changes in a firm's return-generating process due to an increase in size as of the merger date. (See note 11, above.)

References

Asquith, Paul, R. Bruner, F. Mullins. 1986. Merger returns and the form of financing, photocopy. Boston: Harvard Business School, October.

Auerbach, A. J. 1979. Wealth maximization and the cost of capital. *Quarterly Journal of Economics* 93: 443–46.

Auerbach, A. J., and D. Reishus. 1987. The effect of taxation on the merger decision, photocopy. Cambridge, Mass.: National Bureau of Economic Research.

Brown, S. J., and J. B. Warner. 1980. Measuring security price performance. *Journal of Financial Economics* 8: 205–58.

———. 1985. Using daily stock returns: The case of event studies. *Journal of Financial Economics* 14: 3–31.

Brown, S. J., and M. Weinstein. 1985. Derived factors in event studies. *Journal of Financial Economics* 14: 491–6.

Callison, J. Elizabeth. 1987. An analysis of bid premiums and acquisition offers for *Forbes* 500 firms: 1979–83, Ph. D. dissertation. Philadelphia: University of Pennsylvania.

The Capital Changes Reporter. Chicago: Commerce Clearing House.

Carleton, W., D. Guilkey, R. Harris, and J. Stewart. 1983. An empirical analysis of the role of the medium of exchange in mergers. *Journal of Finance* 38: 813–26.

Dimson, E. 1979. Risk measurement when shares are subject to infrequent trading. *Journal of Financial Economics* 7: 197–226.

Dimson, E., and P. Marsh. 1983. The stability of U.K. risk measures and the problem of thin trading. *Journal of Finance* 38: 735–83.

———. 1986. Event study methodologies and the size effect: The case of U.K. press recommendations. *Journal of Financial Economics* 17: 113–42.

Dodd, P., and R. Ruback. 1977. Tender offers and stockholder returns: An empirical analysis. *Journal of Financial Economics* 5: 351–74.

Eckbo, E., and H. Langohr. 1986. Disclosure regulations and determinants of takeover premiums, working paper. Los Angeles: University of California, May.

Edwards, S. J., and M. J. Keen. 1985. Taxation, investment and marginal *Q*. *Review of Economic Studies* 52: 665–79.

Fama, E., L. Fisher, M. C. Jensen, and R. Roll. 1969. The adjustment of stock prices to new information. *International Economic Review* 10: 1–21.

Fishman M. J. 1986. Pre-emptive bidding and the role of the medium of exchange in acquisitions, photocopy. Evanston, Ill.: Northwestern University, July.

Franks, J., and R. Harris, 1986a. Shareholder wealth effects of corporate takeovers: The U.K. experience, 1955–85, working paper. London: London Business School; Chapel Hill: University of North Carolina; November.

———. 1986b. The role of the Mergers and Monopolies Commission in merger policy. *Oxford Review of Economic Policy* 2: 58–78.

Grinblatt, M., and S. Titman. 1987. A comparison of measures of abnormal performance on a sample of monthly mutual fund returns, photocopy. Los Angeles: University of California, February.

Grossman, S. J., and O. D. Hart. 1982. Corporate financial structure and managerial incentives. In *The economics of information and uncertainty,* ed. J. McCall, 107–40. Chicago: University of Chicago Press.

Hansen, R. G. 1984. Informational asymmetry and the means of payment in auctions, working paper. Hanover, N.H.: Amos Tuck School, Dartmouth College.

Hansen, R. G. 1987. A theory for the choice of exchange medium in mergers and acquisitions. *Journal of Business* 60: 75–95.

Heinkel, R., and E. Schwartz. 1985. Rights versus underwritten offerings: An asymmetric information approach. *Journal of Finance* 41: 1–18.

Jensen, M. C. 1986. Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review* 75: 323–29.

Jensen, M. C., and R. Ruback. 1983. The market for corporate control: The scientific evidence. *Journal of Financial Economics* 11: 5–50.

King, M. A. 1977. *Public policy and the corporation.* London: Chapman and Hill.

———. 1986. Takeovers, taxes and the stock market, photocopy. London: London School of Economics.

Loderer, C.F., and D. Mauer. 1986. Acquiring firms in corporate mergers: The post merger performance, photocopy. West Lafayette, Ind.: Purdue University.

Marsh, P. 1979. Equity rights issues and the efficiency of the U.K. stock market. *Journal of Finance* 34: 839–62.

———. 1982. The choice between equity and debt: An empirical study. *Journal of Finance* 37: 121–44.

Mikkelson, W., and R. Ruback. 1985. An empirical study of the inter-firm equity investment process. *Journal of Financial Economics* 14: 523–54.

———. 1986. Targeted repurchases and common stock returns, working paper 1707–85. Cambridge: Sloan School of Management, Massachusetts Institute of Technology.

Miller, M., and K. Rock. 1985. Dividend policy under asymmetric information. *Journal of Finance* 40: 1031–51.

Myers, S. C. 1984. The capital structure puzzle. *Journal of Finance* 39: 575–92.

Myers, S. C., and N. S. Majluf. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13: 187–222.

Niden, C. 1986. The role of taxes in corporate acquisitions: Effects on premium and type of consideration, photocopy. Chicago: University of Chicago.

Roll, R. 1986. The hubris hypothesis of corporate takeovers. *Journal of Business* 59: 197–216.

Shoven, J. B., and L. B. Simon. 1987. Share repurchases and acquisitions: An analysis of which firms participate, working paper. Cambridge, Mass.: National Bureau of Economic Research.

Smith, C., Jr. 1986. Investment banking and capital acquisition process. *Journal of Financial Economics* 15: 3–29.

Wansley, J., W. Lane, and H. Yang. 1983. Abnormal returns to acquiring firms by type of acquisition and method of payment. *Financial Management* 12: 16–22.

Comment

Artur Raviv

Franks, Harris, and Mayer document several very interesting empirical regularities in the means of payment offered in takeovers. The most striking results are:

1. The percentage of all-cash offers in the United States increased over time, from none in 1955–59 to 58 percent in 1980–84. At the same time, all-equity offers declined from 76 percent to 22 percent.
2. The United Kingdom demonstrated the reverse pattern of changes over those years.
3. About one-sixth of the acquisitions in the sample were through a tender offer. Nontender, or "friendly," acquisitions are those obtained by an approving board of directors. The appreciation to the targets of tender offers was higher than to those in nontender acquisitions.

This paper can be best viewed as a fact-finding mission. Although the authors survey several propositions that might explain the empirical regularities, no simple theory can account for all the facts simultaneously. I would find it much easier to evaluate the results if a coherent model had been constructed and then tested by the empirical results. Obviously, this would not be an easy task since the problem attacked by the authors is at the core of the unsolved problems in corporate finance: capital structure, taxation, and corporate control.

In the remainder of my comments I would like to propose an alternative model, which in my view is capable of explaining many of the results given by the authors. This model has been developed by Michael Fishman in a working paper entitled "Preemptive Bidding and the Role of the Medium of Exchange in Acquisitions." Here the key economic difference between a cash offer and an offer of securities is that the value of a cash offer is independent of the future profitability of the acquired target, while the value of a securities offer is not. The willingness to offer or accept a given package of securities may indicate something about the information held by the bidder and the target. In particular, if target managers possess private information regarding the profitability of their firm, they will want to use this information in making their decisions whether to accept a securities offer since the value of this offer depends on the future profitability of the target. Thus, securities offers are a means of making an offer contingent on the target's information. In Fishman's model a bidder learns about the profitability of the target, and if his valuation is high, makes a high, *preemptive* bid in order to eliminate potential competition. This bid is in the form of cash. If the bidder's

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valuation is lower, he will make a securities offer, which will induce an efficient accept/reject decision on the part of the target but may also induce competitors to join the bidding for the target.

The results that can be obtained from such a model are:

1. Cash offers are more frequent in tender offers than in nontender offers. In tender offers target managers do not use their information and therefore there is no need for equity payment. Equity is used in the case of nontender offers.
2. Cash offers are higher on average than equity offers. Equity signals lower value and induces competition.
3. The postmerger performance of the bidder, if the initial offer is for cash, is better than if the initial offer is for equity.
4. The postmerger performance for tender offers (which tend to be for cash) is better than that for nontender offers (which tend to be for equity).

These results are consistent with the Franks, Harris, and Mayer evidence. Additional results implied by Fishman's model and which could be tested by the authors are:

1. Competing bidders appear more frequently in equity offers than in cash offers.
2. Target management will more frequently reject an equity offer than a cash offer.
3. Rejecting an equity offer will result in a reduction in the value of the target's shares, since it indicates that the target's managers believe the target is not as valuable now as it was.

It would be interesting to find out whether these results can be supported by the data the authors have analyzed.

Comment

Richard S. Ruback

Empirical evidence shows that the benefits of takeovers to the target's shareholders are large in mergers and even larger in tender offers. Although mergers and tender offers are substitutes, there are some general differences in the two types of takeover methods:

	Tender Offers	*Mergers*
Process	Through shares	Through management
Perception	Hostile	Negotiated
Payment	Cash	Stock

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In Jensen and Ruback (1983) we focused on the process difference to explain the larger measured average returns in tender offers than in mergers. Truncation bias could explain the higher *measured* average premiums in tender offers. Low-value merger bids that are rejected by managers do not become hostile tenders because it is more costly to persuade shareholders in hostile deals than in negotiated deals and because hostile deals are more expensive.

Franks, Harris, and Mayer emphasize the payment differences. In particular, they try to use theories of capital structure choice and theories of takeovers simultaneously.

The good part of this approach is that different takeovers do seem to involve different financing schemes, so that the measured effects of takeovers may include factors that are caused purely by the financial restructurings involved.

The bad part of this approach is that it layers ignorance on confusion. As a corporate finance person who works in both areas, I am afraid this is not a pleasant admission. Unfortunately, we have no accepted theory of the choice of takeover method. In contrast, we have many theories about capital structure choice. But none has survived even simple tests. And the interrelations among the many theories are obscure at best. Saying that the state of the art in capital structure choice is confused would be generous.

It is hard to fault the authors of this paper for the confusion of the theory. My complaint is *not* that the authors fail to develop a new theory of capital structure and merger choice. I am mentioning the lack of theory at the outset because it locates and defines what we learn from the authors. Their paper does not really test any particular theory. Instead, it makes perhaps a bigger contribution by providing numerous interesting facts.

The magnitude of the data collection and integration in this paper is huge and competently done. The sample contains merger and tender offer data for both the United States and the United Kindgom over the years 1955–85, including about 2,000 observations.

The facts that I find most interesting are in table 8.7. There, in panel B, the event month abnormal returns are:

Cash tenders	28%	N = 135
Cash nontenders	24%	N = 340
Equity tenders	20%	N = 29
Equity mergers	11%	N = 548

This ranking suggests that both the type of offer and the medium of exchange are important. The regression tests provide an affirmative statistical test of this proposition.

I cannot resist the temptation to explain the rankings. My hypothesis hinges on asymmetric information. Accept the Jensen and Ruback view

that the market for corporate control involves competition between management teams for the rights to manage corporate resources. You would then expect most takeovers to be proxy fights.[1] But this is not true. Why? Because these contests require very "management smart" investors—investors that can evaluate the plans of competing management teams. Stockholders are unlikely to have the expertise or incentives to evaluate the plans accurately. Indeed, clever stockholders are efficient risk bearers: They hold a well-diversified portfolio and cannot remember the names of the firms in the portfolio, never mind how they should be managed.

What's a poor potential competing manager to do? Get somebody smarter to make the decision or simplify the decision. If target managers are cooperative, then a merger is more likely. And the range of payment types possible expands because the target managers certify to the shareholders that the takeover is a good deal.

But suppose the target management decides to oppose the merger. Also assume the deal is worthwhile to the bidder even if it becomes hostile. Then the offer has to be simplified. Bidders should use securities that are easy to value—like cash.

In short, the same forces that make some takeovers mergers instead of tender offers also make most tender offers cash transactions and most mergers stock transactions. This means that, as with any set of correlated variables, the attribution of results to particular variables is very risky.

The facts that confuse me the most are in table 8.8. It shows that there were significant negative abnormal returns in the two years following the offer. The returns were about −17 percent in the United States. I have been confused about this issue because we included a table of postmerger performance in Jensen and Ruback (1983) that had similar results. At the time I was convinced the results were due to selection bias or some simple statistical malfunction. Franks, Harris, and Mayer use almost all mergers, and so the selection bias argument now seems less plausible. They also use different specifications and get similar results. Reluctantly, I think we have to accept this result—significant negative returns over the two years following a merger—as a fact.

Accepting the fact does not mean I have to accept the explanation given. I do not believe there is an explanation for this phenomenon that is consistent with market prices, including the information in the *Wall Street Journal*. We finance folks call it semistrong market efficiency. Economists use the label rational expectations. Whatever you call it, this finding can be used to make money. I can tell when a merger

1. This conceptual framework is explained in more detail in Ruback (1984).

is completed. I can sell short. That gives me supernormal returns. And that violates market efficiency.

References

Jensen, Michael C., and Richard S. Ruback. 1983. The market for corporate control: The scientific evidence. *Journal of Financial Economics* 11(1-4): 5–50.

Ruback, Richard S. 1984. An economic view of the market for corporate control. *Delaware Journal of Corporate Law* 9 (3): 613–25.